

RCRA -vs- DOT Transportation Requirements

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

Regulatory Resources, Inc.
presents

**RCRA -vs- DOT
Transportation Requirements**

Packaging & Transportation Conference

Santa Fe, New Mexico
January 22, 2002


Presented by:
Wade A. Winters, CET, CHMM

1 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

Topics of Discussion

- Liquid
- Aqueous / Alcohol Exception
- Aqueous Corrosive
- Oxidizers / Flammable Gases / Explosives
- Empty Containers
- Universal Wastes
- Off-site by RCRA & DOT




2 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

Liquid By Any Other Name...

- “Liquid” – DOT and RCRA
 - DOT: ASTM D 4359-90
 - RCRA: Liquid = Free Liquid
- “Free Liquid” – RCRA
 - SW-846, Method 9095A, “Paint-Filter Liquids Test”
- “Releasable Liquid” – RCRA
 - SW-846, Method 1311, “TCLP”
 - SW-846, Method 9096, “Liquid Release Test Procedure”




3 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

**DOT Liquid or Solid
“ASTM D 4359-90”**

This test method covers the determination of whether a viscous material is a liquid or a solid.

- A 1-quart vessel filled to $\approx 85\%$ and covered
- Heated for 18-24 hrs in 100°F oven (to equilibrium)
- Remove from oven and immediately invert over a watch glass
- Material is liquid if:
 - Flows $> 2''$ within 3 minutes...OR
 - ≈ 1 gram of liquid collects on the watch glass



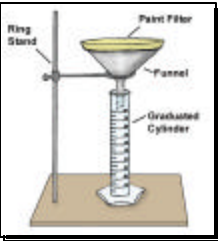
4 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

**Free Liquids – Method 9095A
“Paint Filter Liquid Test”**

This test identifies that liquid exists for the purpose of D001 and D002; it does not indicate that the waste is “liquid-free.”

- 100 mL or 100 g sample
- Waste placed into conical paint filter, Mesh #60 (fine mesh)
- Suspended over graduated cylinder or beaker
- 5-minutes test time
- Results:
 - Any liquid collected = liquid waste
 - No liquid obtained = On to 1311



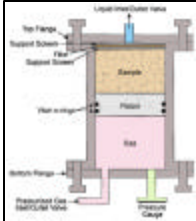
5 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

**Releasable Liquid – Method 1311
“Toxic Characteristic Leaching Procedure”**

The definitive procedure for determining if a waste contains a liquid for the purposes of D001 and D002 characteristics is the pressure filtration technique specified in Method 1311.

- Vacuum filtration for $< 10\%$ solid contents and highly granular
- Positive pressure filtration for other wastes
- 1.5 L sample chamber recommended with 142 mm diameter filter
- Incremental pressures up to 50 psi (2 minute pressure intervals)
- Liquid apparent on sample filter = liquid waste



6 © Copyright 2001

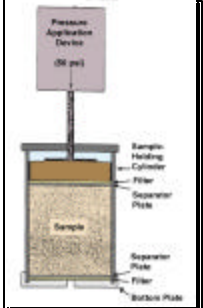
RCRA -vs- DOT Transportation Requirements

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

Releasable Liquid – Method 9096 “Liquid Release Test Procedure”

To determine whether or not liquids will be released from solvents when they are subjected to overburden pressures in landfills

- 10 cm high x 76 mm wide sample chamber
- Piston applies 50 psi pressure to sample
- Liquids apparent on sample filter = liquid waste




7 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

So Then a “Regulatory” Liquid is...

- Non-Viscous Materials**
 - Paint filter test for RCRA (and probably DOT)
 - SW-846, Method 9095A
 - Releasable liquid test for RCRA (and possibly DOT)
 - SW-846, Method 1311
- Viscous Materials**
 - ASTM D 4359-90 for DOT
 - Releasable liquid test for RCRA (SW-846, Method 1311)




8 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

The Ignitable Alcohol Exception

DOT	RCRA
Flash point $\geq 141^{\circ}\text{F}$	Flash point $< 140^{\circ}\text{F}$
Alcohol content $\geq 24\%$ by volume	Alcohol content $< 24\%$ by volume
AND THEN... <ul style="list-style-type: none"> Combustible liquid 	AND THEN... <ul style="list-style-type: none"> Not subject as D001 if also $\geq 50\%$ water (remaining contents not regulated)
OR <ul style="list-style-type: none"> Not subject to HMRs if also $\geq 50\%$ water (remaining contents not regulated) 	

Why didn't EPA write this into their regulations?



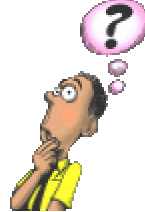
9 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

“Aqueous” Corrosive for RCRA

Aqueous waste is defined as a waste for which pH is measurable; operationally this implies the presence or absence of measurable dissociated hydrogen ions.

- Application of aqueous includes semi-solids (e.g., gels)
- pH ≥ 2 or ≥ 12.5 determined by:
 - SW-846, Method 9040B, “pH Electrometric Measurement”
- Disconnection...
 - Method 9040B requires $\geq 20\%$ total volume of waste to be in aqueous phase (i.e., free water)




10 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

pH Application to DOT HMRs

- pH can be used as entry point into Class 8
 - If waste has pH ≥ 2 or ≥ 12
 - Waste must be aqueous
- Further information necessary for PG determination
- Corrosion to steel and aluminum criteria not pH applicable, however...
 - EPA stated that pH ≥ 4 may be assumed to corrode steel (SAE 1020) $> \frac{1}{4}$ ” per year




11 © Copyright 2001

0102 RCRA -VS- DOT: Transportation Requirements Regulatory Resources, Inc.

Do You Remember When...

- 1990 DOT HMRs required for:
 - D001 ignitable gas
 - D001 oxidizer
 - D003 explosives A and B
- Problem...
 - EPA letter 2/24/95 removes Explosives A & B from D003
 - LETTER SUPERSEDED** – Explosives A & B criteria is still valid (awaiting final written response from EPA)



12 © Copyright 2001


RCRA -vs- DOT
Transportation Requirements

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

The Empty Container Dilemma

DOT

- Cleaned and purged
- For Div 2.2, <40.6 psia



The problem is primarily with containers 15 gallon capacity and aerosols.

RCRA

- Acute toxic wastes (P's)
 - triple rinsed
- Gases (and aerosols)
 - atmospheric pressure
- All others, emptied as far as practicable, and then:
 - <1" remains, OR
 - <3% by weight of the total capacity (<110 gal)


(includes the remaining material in an aerosol)

13 © Copyright 2001

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

Universal Wastes

- In the past, all were RCRA hazardous waste, and hence, DOT regulated
- Today, excepted from "hazardous" waste regulations
- Applicable to:
 - Batteries
 - Hg Thermostats
 - Lamps
 - Pesticides
- Each Universal Waste evaluated to HRMs on individual merit...
 - Fluorescent light bulbs are not a DOT HMR material
 - Batteries may be regulated...or forbidden !!



14 © Copyright 2001

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

RCRA Onsite -vs- DOT Onsite

RCRA

- Contiguous property, including public right-of-ways
- Border road around contiguous property

Movements of hazardous waste, as applied by RCRA on-site, are excepted from RCRA markings and Manifesting (and hence an EPA registered transporter) but are still subject fully to the DOT Hazardous Materials Regulations.

DOT


- Private property
- Does not include public right-of-way

15 © Copyright 2001

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

Now What was Addressed?


- Liquid
- Aqueous / Alcohol Exception
- Aqueous Corrosive
- Flammable Gases / Oxidizers / Explosives
- Empty Containers
- Universal Wastes
- Off-site by RCRA & DOT



16 © Copyright 2001

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

For More Information Contact Us At...



Regulatory Resources, Inc.
240 Joshua Road
Kennewick, WA 99338
Voice: 509-628-1020
Fax: 509-628-0972
Web: www.regulatoryresources.net
Email: wade@regulatoryresources.net

THE HAZMAT NEWS NETWORK

... a FREE newsletter publication dedicated to the P&T professional

17 © Copyright 2001

0102RCRA -VS- DOT: Transportation RequirementsRegulatory Resources, Inc.

18 © Copyright 2001